

Hypertension Knowledge, Awareness, and Attitudes in a Hypertensive Population

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OBJECTIVE: Improved recognition of the importance of systolic blood pressure (SBP) has been identified as one of the major public health and medical challenges in the prevention and treatment of hypertension (HTN). SBP is a strong independent risk factor for cardiovascular disease but no information is available on whether patients understand the importance of their SBP level. The purpose of this study was to assess HTN knowledge, awareness, and attitudes, especially related to SBP in a hypertensive population.

DESIGN/SETTING/PATIENTS: We identified patients with HTN ($N=2,264$) in the primary care setting of a large midwestern health system using automated claims data (International Classification of Diseases, Ninth Revision [ICD-9] codes 401.0–401.9). We randomly selected 1,250 patients and, after excluding ineligible patients, report the results on 826 completed patient telephone interviews (72% response rate [826/1,151]).

MAIN RESULTS: Ninety percent of hypertensive patients knew that lowering blood pressure (BP) would improve health and 91% reported that a health care provider had told them that they have HTN or high BP. However, 41% of patients did not know their BP level. Eighty-two percent of all patients correctly identified the meaning of HTN as “high blood pressure.” Thirty-four percent of patients correctly identified SBP as the “top” number of their reading; 32% correctly identified diastolic blood pressure (DBP) as the “bottom” number; and, overall, only 30% of patients were able to correctly identify both systolic and diastolic BP measures. Twenty-seven percent of patients with elevated SBP and DBP (as indicated by their medical records) perceived that their BP was high. Twenty-four percent of patients did not know the optimal level for either SBP or DBP. When asked whether the DBP or SBP level was more important in the control and prevention of disease, 41% reported DBP, 13% reported SBP, 30% reported that both were important, and 17% did not know.

CONCLUSIONS: These results suggest that, although general knowledge and awareness of HTN is adequate, patients do not have a comprehensive understanding of this condition. For instance, patients do not recognize the importance of elevated SBP levels or the current status of their BP control. An opportunity exists to focus patient education programs and interventions on the cardiovascular risk associated with uncontrolled HTN, particularly elevated SBP levels.

KEY WORDS: hypertension; systolic blood pressure; patient awareness.

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Significant progress has been made in increasing the awareness, detection, treatment, and control of hypertension (HTN); however, studies indicate that about 50%–75% of patients diagnosed with or being treated for HTN do not have adequate control of their blood pressure (BP).^{1–9} Efforts to control HTN have included increasing public knowledge and awareness, especially about the risks associated with uncontrolled BP. In 1972, the National High Blood Pressure Education Program was launched to further the public's knowledge of HTN and the seriousness of the condition.^{10,11} These efforts have in part been successful.^{5,6,12,13} Data from the National Health and Nutrition Examination Survey (NHANES II and NHANES III) reported an increase in BP awareness during the time period 1976–1991 from 51% to 73%.^{5,6} Other studies have assessed HTN knowledge and awareness in the general population with some, but not all, showing a decreased level of knowledge and awareness.^{12,14–17} Studies have been conducted evaluating knowledge and awareness in a hypertensive population,^{18–23} but these studies have been relatively small, have not comprehensively assessed HTN knowledge and awareness, and have not attempted to validate patients' responses. It is important to have access to patients' clinical BP data so that the relationship between their perception of factors, such as BP control and actual clinical BP, can be measured and evaluated in the context of their clinical values.

Improved recognition of the importance of systolic blood pressure (SBP) has been identified as one of the major public health and medical challenges in the prevention and treatment of HTN.³ SBP is a strong independent risk factor for cardiovascular disease but no information is available on whether patients understand the importance of their SBP level.^{24–27} Further, a recent study looking at uncontrolled HTN in the United States concluded that most cases of uncontrolled HTN were related to mild systolic HTN.²⁸ Recent reports have suggested that hypertension knowledge is related to BP control.²⁹ It is important to assess the extent to which patients are aware of the importance of controlling their SBP levels, as patient awareness and education is a component of programs and interventions designed to improve the control of HTN and SBP.

The significance of achieving better control of BP has only been increased by the release in May 2003 of new clinical practice guidelines for the prevention, detection, and treatment of high BP. These guidelines, called the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) and issued after the present study was conducted, present revised BP categories, which include a new “prehypertension” stage (120–139/80–89 mm Hg). The prehypertension stage alone is estimated to represent approximately 22% of American adults.³⁰

The purpose of this study was to assess HTN knowledge, awareness, and attitudes in a hypertensive population, especially related to SBP in a hypertensive population.

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METHODS

We conducted a descriptive study to evaluate HTN knowledge, awareness, and attitudes in a hypertensive population. We randomly selected 1,250 patients with HTN (55% of those with an HTN diagnosis) and conducted patient interviews to obtain information on patients' knowledge and awareness of HTN and also asked about attitudes and perceptions toward HTN. Because this was a descriptive study with no formal statistical hypothesis testing, the sample size was determined based on available resources and precision estimates (95% confidence intervals) associated with varying response rates. Medical record review was performed to collect actual BP values. This study was reviewed and approved by the Institutional Review Board at the Henry Ford Health System.

This study was conducted at the Henry Ford Medical Group, which is part of the Henry Ford Health System in Michigan. The Henry Ford Medical Group, a system-affiliated, multispecialty, salaried physician group, provides most of the care for the Henry Ford Health System. To ensure a high level of participation, we identified one geographic region within the system where physicians and their patients were willing to participate based on prior research studies.^{31–33} We limited our study to an insured patient population with a regular source of care and a primary care physician to control for these factors, which may be related to HTN knowledge, awareness, and attitudes, as well as BP control.

The Henry Ford Health System contains automated medical databases for all inpatient and outpatient encounters. Information on outpatient encounters includes date of visit, diagnoses, physician delivering care, procedures delivered, clinic in which the care was delivered, and charges compiled. The electronic medical record includes information on inpatient interim and final diagnoses, discharge summaries, inpatient pharmacy, lab data, appointments, outpatient visit diagnoses, physiologic measures (including BP values), and clinic office notes. The system is updated continuously.

Ascertainment of Patients with HTN

We identified all patients from the site of interest who had an International Classification of Diseases, Ninth Revision (ICD-9) diagnosis code of HTN (401.0–401.9) during a 6-month period (April 1–September 30, 2000). To identify patients who were active members utilizing the HMO, we included only patients that had been assigned a primary care provider at the Henry Ford Health System.

Patient Telephone Interviews

Patient telephone interviews were conducted to obtain information on patient demographics, medical history, risk factor status, HTN knowledge, awareness, attitudes, perceptions, and BP levels. Additional questions focused on SBP knowledge and awareness. The questionnaire was pilot tested and standardized using trained interviewers at the Henry Ford Health System. Patients identified as having HTN were mailed an introductory letter inviting them to participate in the study and stating that they would be contacted by phone to give consent and participate in a telephone interview.

Automated Data Collection

Information was obtained from the computerized databases for each patient on HTN diagnosis, duration of HTN, number of total physician visits, and HTN-related visits during the past year. Electronic medical record review was conducted by trained chart abstractors to collect detailed information on BP during the 12 months prior to the date of the patient interview, current HTN medications, family history of cardiovascular disease, and newly diagnosed HTN.

Data Analysis

We calculated descriptive statistics to characterize the distribution of the study results. The Statistical Analysis System (SAS, SAS Institute, Cary, NC) was used for all analyses.³⁴

RESULTS

We identified 2,264 patients with an ICD-9 diagnosis code of HTN during the past 6 months who had at least one visit during the previous year. None of the patients identified by our algorithm had an ICD-9 code 401.0 (malignant hypertension). Patient telephone interviews were attempted on 1,250 randomly selected patients; 55 patients were excluded during the interview process because they did not speak English, were too sick to complete the interview, or were deceased. In addition, 44 patients could not be contacted because the phone had been disconnected or had blocked their incoming calls. In total, 826 patients completed the telephone interview for a response rate of 72% (826/1,151).

Characteristics of the patients who completed the interview are presented in Table 1. The median age of patients was 66 years, with a range of 20–97 years. The patient population was composed of approximately 62% whites, 31% blacks, and 4% other race or ethnicity. The patients' average BP during the previous 12 months was 140 mm Hg for systolic and 80 mm Hg for diastolic, with 52% having elevated BP (systolic \geq 140 mm Hg and/or diastolic \geq 90 mm Hg). Ninety-one percent of the patients interviewed were currently taking HTN medication. The median duration of high BP reported by the patients was 14 years.

Patient knowledge of HTN is presented in Table 2. Most of this sample of hypertensive patients were knowledgeable about the meaning of HTN and the seriousness of the condition to their health. Ninety percent knew that lowering BP would improve health and 96% believed that people can do things to lower their high BP. When asked more specific questions about BP, patients were less knowledgeable. Thirty-four percent of patients correctly identified SBP as the "top" number of their reading; 32% correctly identified DBP as the "bottom" number; and, overall, only 30% of the patients were able to correctly identify both SBP and DBP measures. Patients were generally unaware that SBP is important in BP control; when asked which measure is more important, 41% reported that diastolic is more important, 13% reported that systolic is more important, while 30% reported that both systolic and diastolic are important, and 17% did not know. Thirty-nine percent did not know the normal level for SBP or reported that normal SBP is 140 mm Hg or greater. Conversely, more than 69% of patients identified normal DBP as less than 90 mm Hg. Patients were knowledgeable about the cut point for DBP with only 8% reporting that 90 mm Hg or greater was normal. Pa-

Table 1. Characteristics of 826 Patients with Hypertension

	n (%)
Age group, y*	
≤ 39	24 (2.9)
40–49	80 (9.7)
50–59	184 (22.3)
60–69	188 (22.8)
70–79	230 (27.8)
80–89	101 (12.2)
≥ 90	14 (1.7)
Female*	498 (60.3)
Education*	
<High school	73 (8.8)
High school graduate	260 (31.5)
Some college	237 (28.7)
College graduate	217 (26.3)
Race/ethnicity*	
Black	252 (30.5)
White	510 (61.7)
Other	30 (3.6)
Income	
<\$15,000	63 (7.6)
\$15,000–\$50,000	275 (33.3)
\$50,001–\$100,000	183 (22.2)
>\$100,000	78 (9.4)
Refused/don't know	222 (26.9)
Blood pressure-related factors†	
Duration of high blood pressure, y	9 (12.8 SD)
BP ≥ 140 and/or ≥ 90 mm Hg	430 (52.1)
Currently on HTN medication	748 (90.6)
Family history of cardiovascular disease‡,§	156 (18.9)
	Mean (SD)
Most recent visit: SBP, mmHg	139 (16.2)
Most recent visit: DBP, mmHg	80 (10.7)
Average prior 12 months†: SBP, mmHg	139.9 (12.8)
Average prior 12 months†: DBP, mmHg	80.5 (8.6)

*Data obtained from patient telephone interviews.

†Data obtained from electronic medical record review.

‡Average of up to 12 BP readings during prior 12 months.

§Diabetes, hyperlipidemia/dyslipidemia, heart disease, cerebrovascular disease, peripheral vascular disease, chronic renal failure, nephropathy, or retinopathy.

Some categories may not total 100% due to missing responses.

BP, blood pressure; SBP, systolic blood pressure; DBP, diastolic blood pressure; HTN, hypertension; SD, standard deviation.

tients were asked about risk factors for developing high BP and the health consequences of uncontrolled BP. We included factors that were not established risk factors for high BP or health consequences of uncontrolled HTN to minimize reporting bias. Nearly 70% of patients knew that high BP could lead to congestive heart failure. Elevated BP was also reported to be associated with conditions such as kidney disease.

We asked patients about awareness of their HTN based on their communication with their doctor or health care provider (Table 3). Almost all patients (91%) reported that a doctor or health care provider had told them that they have HTN. Sixty-five percent recalled being told their optimal personal BP reading. Twenty-five percent of these patients reported that their doctor told them their SBP should be 140 mm Hg or higher and 24% reported that they did not know what their doctor had recommended. Only 51% recalled being told their optimal goal for SBP, while 65% recalled being told their optimal goal for DBP. We also asked whether the patient had been told that the top number (systolic level) or bottom number (diastolic level) is important to keep under control. Only about half of the patients reported that the doctor or health care provider had spe-

Table 2. Hypertension Knowledge (N=826)*

	n (%)
What does the term hypertension mean?	
High blood pressure	676 (81.8)
High level stress/tension	91 (11.0)
Nervous condition	14 (1.7)
High blood sugar	10 (1.2)
Overactivity	5 (0.6)
Don't know	29 (3.5)
How dangerous is hypertension to your health?	
Extremely	580 (70.2)
Somewhat	212 (25.7)
Not at all	5 (0.6)
Don't know	26 (3.1)
Would lowering high blood pressure improve a person's health?	
Yes	745 (90.2)
No	13 (1.6)
Somewhat	18 (2.2)
Don't know	46 (5.6)
What do the two numbers reported for blood pressure mean?	
Correctly replied "systolic" for top number	283 (34.3)
Correctly replied "diastolic" for bottom number	262 (31.7)
Correctly replied for both top and bottom number	248 (30)
What should normal blood pressure levels be?	
Top number	
< 140	497 (60.2)
140	100 (12.1)
> 140	43 (5.2)
Don't know	182 (22.0)
Bottom number	
< 90	574 (69.5)
90	47 (5.7)
> 90	16 (1.9)
Don't know	185 (22.4)
Which measure(s) is (are) more important?	
Top (systolic)	104 (12.6)
Bottom (diastolic)	335 (40.6)
Both (top and bottom)	246 (29.8)
Don't know	137 (16.6)
Can people do things to lower their blood pressure?	
Yes	793 (96)
No	5 (0.6)
Don't know	23 (2.8)
Can lowering blood pressure even a little bit improve health?	
Yes	795 (96.2)
No	3 (0.4)
Don't know	24 (2.9)

*Data obtained from patient telephone interviews.

Some categories may not total 100% due to missing responses.

cifically told them that either the top or bottom number is important to keep under control.

The results of questions relating to patient attitudes and perceptions are included in Table 4. Thirty-five percent of these hypertensive patients did not consider high BP a serious health concern and over 35% believed that high BP is unavoidable. We were interested in patients' perception of BP levels as compared to actual BP as recorded in the medical record. We explored the relationship between patient self-report of BP levels and actual values recorded in the medical record at the most recent visit (Table 5). Forty-one percent (338 patients) did not know their BP value. Only 29/117 (25%) patients with elevated systolic and diastolic levels were able to correctly classify their BP value as being elevated for both systolic and diastolic. Of patients who reported that their BP

Table 3. Hypertension Awareness (N=826)*

	n (%)
Have you ever been told by a doctor or health care provider that you have hypertension?	
Yes	751 (90.9)
No	66 (8.0)
Did your doctor or health care provider tell you what your personal blood pressure reading should be?	
Yes	536 (64.9)
No	181 (21.9)
Don't know	109 (13.2)
If told, what should your top number (systolic) be?	
<140	271 (50.6)
140	103 (19.2)
>140	34 (6.3)
Don't know	128 (23.9)
If told, what should your bottom number (diastolic) be?	
<90	345 (64.4)
90	56 (10.4)
>90	6 (1.1)
Don't know	128 (23.9)
Has a doctor or health care provider ever told you that the top number is important to keep under control?	
Yes, doctor	384 (46.5)
Yes, other health care provider	25 (3.0)
No	266 (32.2)
Don't know	151 (18.3)
Has a doctor or health care provider ever told you that the bottom number is important to keep under control?	
Yes, doctor	479 (58.0)
Yes, other health care provider	35 (4.2)
No	182 (22.0)
Don't know	130 (15.7)

*Data obtained from patient telephone interviews.

Some categories may not total 100% due to missing responses.

was less than 140 mm Hg and less than 90 mm Hg, 123 (66%) had actual BP levels that corresponded to this range. Patients were also asked whether they believed their BP level was high, borderline high, normal, or low. Of patients who reported that their BP level was normal or low ($n=324$), 185 (57%) had appropriate levels of BP based on actual BP readings from the medical record.

We performed further analyses in which these outcomes were stratified by demographic characteristics (age, ethnicity, gender, education, and income). In general, there were no material differences in knowledge, perceptions, or attitudes among the subgroups. Patients with at least a completed high school education tended to report better understanding of HTN than patients without a high school education. Specifically, patients with a high school education were significantly more likely to correctly understand the components of and normal values for blood pressure (e.g., 32% of high school-educated patients understood that the terms "systolic" and "diastolic" refer to the top and bottom numbers, respectively, compared with 7% of less than high school-educated patients; $P<.0001$). In addition, high school-educated patients were significantly more likely to report that they had received information from a doctor regarding ideal BP values (e.g., 52% of high school-educated patients reported being told by a doctor that their systolic pressure should be less than 140 compared to 29% of less than high school-educated patients; $P<.0001$). However,

Table 4. Attitudes and Perceptions Related to Hypertension (N=826)*

	n (%)
What was your blood pressure level at your most recent visit?	
Systolic	
<140	213 (25.8)
140	60 (7.3)
>140	142 (17.2)
Was told but don't recall value	286 (34.6)
Don't know if told	37 (4.5)
Wasn't told	81 (9.8)
Diastolic	
<90	330 (40.0)
90	48 (5.8)
>90	28 (3.4)
Was told but don't recall value	295 (35.7)
Don't know if told	37 (4.5)
Wasn't told	81 (9.8)
What did you think this blood pressure level was?	
High	57 (13.5)
Borderline high	95 (22.6)
Normal (under control)	235 (55.8)
Low	21 (5.0)
Don't know	6 (1.4)
If ever told by a doctor or health care provider that you have high blood pressure:	
How serious of a personal health concern has high blood pressure been?	
Very serious concern	171 (22.8)
Somewhat serious concern	290 (38.6)
Not at all serious concern	260 (34.6)
How important do you think taking medicine is to keeping blood pressure under control?	
Very important	611 (81.4)
Somewhat important	83 (11.1)
Not at all important	14 (1.9)
Do you think that high blood pressure (hypertension) is a life-long disease?	
Yes	461 (61.4)
No	163 (21.7)
Don't know	118 (15.7)
Do you think that high blood pressure (hypertension) is something you can cure?	
Yes	217 (28.9)
No	356 (47.4)
Don't know	169 (22.5)
Can changing lifestyle help to lower your blood pressure?	
Yes	673 (89.6)
No	32 (4.3)
Don't know	33 (4.4)
Do you think that high blood pressure is an avoidable part of aging?	
Yes	292 (38.9)
No	269 (35.8)
Don't know	181 (24.1)
What is the single most important factor in controlling your high blood pressure?	
Taking medications	351 (46.7)
Exercising	56 (7.5)
Less stress	92 (12.3)
Quitting smoking	19 (2.5)
Change diet (salt)	79 (10.5)
Reducing alcohol	2 (0.3)
Losing weight	95 (12.6)
Other	15 (2.0)
Don't know	31 (4.1)
Do you think your blood pressure has improved over the last 12 months?	
Yes	472 (62.8)
No	207 (27.6)
Don't know	63 (8.4)

*Data obtained from patient telephone interviews.

Some categories may not total 100% due to missing responses.

Table 5. Patient Self-report of Blood Pressure Versus Actual Blood Pressure Recorded in Medical Record (N=826)

	<i>n (%)</i>	$\geq 140/\geq 90^\dagger$	$< 140/< 90^\dagger$	$\geq 140/< 90^\dagger$	$< 140/\geq 90^\dagger$
What was your blood pressure level at your most recent visit?*					
$\geq 140/\geq 90$	53 (6.5)	29 (54.7)	10 (18.9)	11 (20.8)	2 (3.8)
$< 140/< 90$	187 (22.8)	10 (5.3)	123 (65.8)	44 (23.5)	7 (3.7)
$\geq 140/< 90$	138 (16.8)	18 (13.0)	45 (32.6)	73 (52.9)	0 (0)
$< 140/\geq 90$	22 (2.7)	3 (13.6)	9 (40.9)	7 (31.8)	2 (9.1)
Wasn't told	81 (9.9)	17 (21.0)	39 (48.1)	20 (24.7)	4 (4.9)
Don't know	338 (41.3)	57 (16.9)	134 (39.6)	119 (35.2)	20 (5.9)
What did you think your blood pressure level was at this visit?*					
High/borderline high	185 (22.6)	39 (26.5)	51 (27.6)	70 (37.8)	9 (4.9)
Normal/low	324 (39.6)	28 (8.6)	185 (57.1)	100 (30.9)	6 (1.9)
Not applicable	293 (35.8)	54 (18.4)	116 (39.6)	99 (33.8)	19 (6.5)
Don't know	17 (2.1)	2 (11.8)	8 (47.1)	6 (35.3)	1 (5.9)

*Data obtained from patient telephone interviews.

†Data obtained from electronic medical record review.

Some categories may not total 100% due to missing responses.

er, we found the small sample size made the interpretation of the subgroup analyses problematic.

A key to understanding patients' attitudes toward high BP is identifying the sources for HTN information. Seventy-four percent reported that a physician or other health care provider was a source for information about high BP. Fifty-nine percent of patients reported that mass media (television, newspapers, magazines, and radio) was a source for information. Almost 30% reported that they get their HTN information from friends and relatives.

DISCUSSION

We conducted this descriptive survey to understand the current status of HTN knowledge, awareness, and attitudes in a group of hypertensive patients. Our results suggest that patients are knowledgeable about HTN in general, but are less knowledgeable about specific factors related to their condition, and specifically their own level of BP control. The median duration of HTN was 14 years, suggesting that even though these patients have had this condition for a long duration their knowledge is inadequate. Patients were unaware that SBP is important in BP control and reported that physicians did not emphasize the significance of high SBP levels. Further, many patients (41%) did not know their BP value nor could they accurately report whether it was elevated.

Patients were knowledgeable about the meaning of HTN, and the seriousness of the condition to their health. Ninety-six percent knew that lowering BP would improve health and 96% thought that people can do things to lower their high BP. Nearly 70% of patients knew that high BP could lead to congestive heart failure. Almost all patients were aware of their HTN with 91% reporting that a doctor or health care provider had told them that they have HTN. These findings are consistent with NHANES III data suggesting that there has been an increase in BP awareness.^{5,6}

Improved recognition of the importance of SBP has been identified in recent years as one of the major public health and medical challenges in the prevention and treatment of HTN because of the potential impact on the morbidity and mortality associated with cardiovascular disease and stroke. This is the first study that provides information on the current state of

patient knowledge and awareness with respect to SBP. Previous studies have focused on diastolic BP (DBP) only. Our results indicate that patients are generally unaware that SBP is important in HTN and BP control. Sixty-five percent of patients were told their optimal BP reading while only about half reported that they were specifically told that the top and bottom numbers are important to keep under control. When asked which measure is more important, 41% reported that diastolic is more important, 13% reported that systolic is more important, while 30% reported that both systolic and diastolic are important, and 17% did not know. Thirty-nine percent did not know the normal level for SBP or reported that normal SBP is 140 mm Hg or greater. Conversely, more than 69% of patients identified normal DBP as less than 90 mm Hg. Patients were knowledgeable about the cut point for DBP, with only 8% reporting that 90 mm Hg or greater was normal. These findings suggest the need for education of patients, physicians, and other health care providers related to the importance of elevated SBP and cardiovascular risk.

To understand patients' perception with respect to BP levels, we compared self-reported BP to actual BP as recorded in the medical record. Many patients did not know their BP level nor could they accurately classify their level as elevated or normal. These findings suggest that patients' perception of their BP level does not reflect their actual readings except for the majority of those with controlled BP. Further, 41% of patients reported that their values were in the normal range, but in fact they were elevated.

The importance of hypertension awareness and knowledge and the potential impact of BP education programs have been reported on recently. Patients who were aware that elevated BP levels lead to reductions in life expectancy had a higher compliance level with medication use and follow-up visits than patients without this awareness.³⁵ Surveys of hypertensive patients in three clinical sites showed that lack of knowledge concerning target SBP level was an independent predictor of poor BP control.³⁶ Reductions in SBP and DBP and improved medication-use compliance have been achieved through an education program that stressed, in part, "knowing high BP."³⁷ This recent research all points to the need to improve hypertension knowledge and awareness in order to increase medication-use compliance and BP control.

An opportunity exists to use patient-reported sources for HTN information in order to disseminate HTN information. In this study, physicians, other health care providers, mass media, and print and video materials were important sources of information as reported by the patients. The mass media have also been identified as a major source of patient information in a study by Kjellgren et al.¹⁹ and represents an important opportunity to influence patient knowledge, awareness, and attitudes toward HTN control.

No other study to our knowledge has comprehensively assessed patient HTN knowledge, awareness, attitudes, and actual BP readings with a focus on SBP. We had the ability to conduct detailed patient interviews to begin to understand the current status of knowledge, awareness, and attitudes in a large hypertensive population, and we were also able to collect actual BP readings from medical records. This is one of the first studies in which BP readings were obtained from medical records and then compared to values reported by patients themselves. It is also important to note that, given the fact that SBP varies over time, we designed our study to account for this by averaging the BP readings obtained in review of the medical records.

There are several limitations to this study. The selection of a single region within the Henry Ford Health System in which to conduct this study may limit the generalizability of these findings to populations with limited access to care and to other physicians. Our sample is only directly comparable to a population similar to that represented in the Henry Ford Health System. Furthermore, the hypertensive patient population represented in our sample does not include those too sick to participate in the study. Thus, hypertensive patients in our sample may differ from the general hypertensive population in terms of access to medical care, access to prescription drugs, employment status, general health/comorbidity status, and/or other factors. However, based on the comprehensiveness of the patient interview, which in some instances lasted for up to 1 1/2 hours, and the detailed information on multiple measures of BP over a 12-month period, we did use the resources available to obtain specific and detailed information from the included patients and their medical records.

The algorithm we used to screen and identify patients with HTN may have missed some patients with HTN. However, our goal was not to assess the prevalence of HTN but to identify a group of hypertensive patients to describe awareness, knowledge, and attitudes. We have utilized this approach to identify and define patients with HTN using claims data and medical records previously.³¹

There is no standardized instrument available to assess HTN knowledge, awareness, and attitudes. We utilized the existing literature, practicing physicians, and experts in the field of HTN to design a data collection instrument that would be comprehensive and detailed. We did not attempt to create an overall score or index for the results of these data, as we believe each question provides important information related to the study questions. Creating an overall score or index may impose an artificial significance on the results of some questions. The data on family history may be limited because no validation of these data occurred. Further, for the subgroup analyses, there were small cell sizes and the analyses must be considered exploratory in nature.

To achieve the ultimate goal of improving health by controlling HTN, it is important to fully understand the current

status of patient knowledge, awareness, and attitudes with respect to HTN. It is necessary to understand these patient factors to develop effective strategies and interventions that enlist the patient as a participant in the management of their health.

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SGIM 28th Annual Meeting

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Out of Chaos: The Critical Role of Generalists

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Second Annual SGIM Visiting Professor Program in Geriatrics Gerontology

Thursday, May 12, 2005:

12:00-1:00 pm: Interest Group IT09: Geriatrics Interest Group Meeting

Session Coordinator: C Bree Johnston, MD, Associate Professor, University of California, San Francisco

1:30 to 3 pm: Abstract Session D4 Geriatrics. Session Moderators: Claudia Beghé, MD and Christine K. Cassel, MD

5:00-7:00 pm: Poster Session 1

All the geriatrics posters will be grouped together and presented during this session.

7:00-9:00 pm

Keynote Lecture and Reception

If Generalists Defined Quality of Care: What the World Needs From Us

Christine K. Cassel, MD

Friday, May 13, 2005

7:00-8:30 am: Walking Poster Session: Dr. Cassell will lead a "walk and talk" tour of the posters first presented on Thursday evening.

The SGIM Visiting Professor in Geriatrics & Gerontology is sponsored in 2005 by an unrestricted educational grant from the Merck Institute of Aging and Health.